

A REVIEW OF THE CACTUS BUGS OF THE GENUS *CHELINIDEA*
WITH THE DESCRIPTION OF A NEW SPECIES
(HEMIPTERA: COREIDAE)

JON L. HERRING

Systematic Entomology Laboratory, IIBIII, Agric. Res., Sci. and Educ. Admin., USDA, % U.S. National Museum of Natural History, Washington, D.C. 20560.

Abstract.—The Nearctic genus *Chelinidea* Uhler is reviewed and their biology discussed. One new species, *C. staffilesi* is described from Mexico. The other species are redescribed: figures of all, mostly from type-specimens, and a key to the species are provided.

The cactus bugs of the genus *Chelinidea* Uhler have long been considered one of the more important groups of ectophagous insects attacking prickly pear in their native habitats. In areas outside their natural range, they have been established with little success as biological control agents: Queensland and New South Wales, Australia, against *Opuntia stricta* Haworth and *O. inermis* DeCandolle (Dodd, 1940), and on Santa Cruz Island, California against *O. littoralis* (Engelmann) Cockerell, *O. oricola* Engelmann and their hybrids (Goeden et al., 1967). It has been shown that these bugs are extremely liable to displacement by other imported insects such as *Cactoblastis cactorum* (Berg) and *Dactylopius opuntiae* Cockerell. Dodd (1940) observed that *Chelinidea vittiger* Uhler would starve rather than migrate to uninfested plants once its food supply was destroyed. Even in the absence of competitors on Santa Cruz Island, it was judged to be of little value. Here too, it migrated no more than 24 meters from the site of the original release in over seven years. In most areas of North America prickly pears are not a problem because a complex of insects, including *Chelinidea*, keeps them under control. Hunter et al. (1912) and Mann (1969) gave excellent reviews of the economics and biology of the species of *Chelinidea* and other cactus feeding insects and mites. Although *Chelinidea* feed almost exclusively on cacti, a laboratory colony in Hawaii scarred pineapple leaves, causing the laboratory to drop it from consideration as possible introduction for *Opuntia* control (Fullaway, 1954).

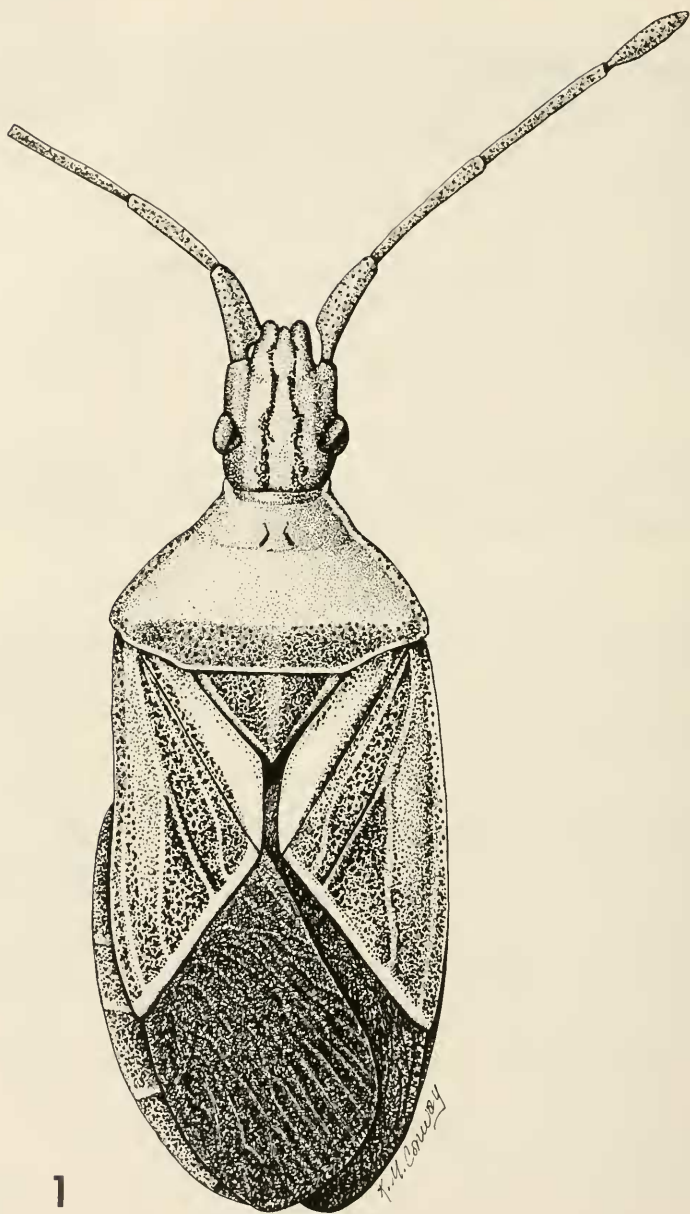


Fig. 1. *Chelinidea stafflesii*, holotype ♂, Mitla, Oaxaca (USNM).

KEY TO THE SPECIES OF *CHELINIDEA* UHLER

1. Dorsal surface of anterior, and usually all, femora carinate, at least distally; a pair of distinct teeth on anterior margin of pronotum 2
 - Dorsal surface of femora evenly rounded; teeth on anterior margin of pronotum reduced to short tubercles with a small notch behind, or teeth entirely absent 4
2. Clavus and posterior margin of corium pale, contrasting sharply with rest of hemelytra to form an X-shaped pattern: dorsal surface of femora carinate only on distal end; smaller species 10–11 mm (Fig. 1) *staffilesi*, new species
 - Clavus and corium with pale and fuscous markings but not forming a distinct X-shaped pattern; dorsal surface of femora carinate for their entire length; larger species 11.5–15.0 mm 3
3. Ventral surface of anterior femora with 5 to 10 teeth in 2 rows; posterior femora with 7 or more teeth on distal half; juga usually produced beyond tylus; head usually pale, stripes, if present, pale, broken or obscure (Fig. 2) *tabulata* (Burmeister)
 - Ventral surface of anterior femora with only 2 or 3 teeth; posterior femora with 4–6 teeth on distal half; juga and tylus of equal length or tylus slightly longer, head with prominent dark stripes at least to beyond eyes (Fig. 3) *canyonae* Hamlin
4. Anterior margin of pronotum without any semblance of teeth or tubercles; lateral margins of collar parallel sided, collar sharply delimited by a deep incisure from rest of pronotum, color uniformly pale; size smaller 9.5–10.5 mm (Fig. 4) *hunteri* Hamlin
 - Anterior margin of pronotum with a distinct notch at base of short, usually outwardly directed teeth or tubercles; collar not sharply delimited by a deep incisure; color sometimes uniformly pale but usually with prominent dark stripes on head and markings on anterior and posterior margins of pronotum and disc of abdomen; antennae and legs black; size larger 10–15 mm (Figs. 5–8) *vittiger* Uhler

Chelinidea staffilesi Herring, NEW SPECIES

Fig. 1

A small species with a prominent pale cross on hemelytra.

Male.—Head in side view flattened above, anterior margin of bucculae and lorum subequal; rostrum reaching onto 2nd ventral abdominal segment; juga rounded anteriorly, not surpassing tylus; only 1st antennal segment foliaceous. Ocelli slightly closer to eyes than to each other. Pronotum moderately convexed transversely; lateral carinae reflexed and produced anteriorly along the base of the head as two distinct acute teeth reaching approximately $\frac{1}{3}$ distance to base of eye. Connexivum dilated and reflexed.

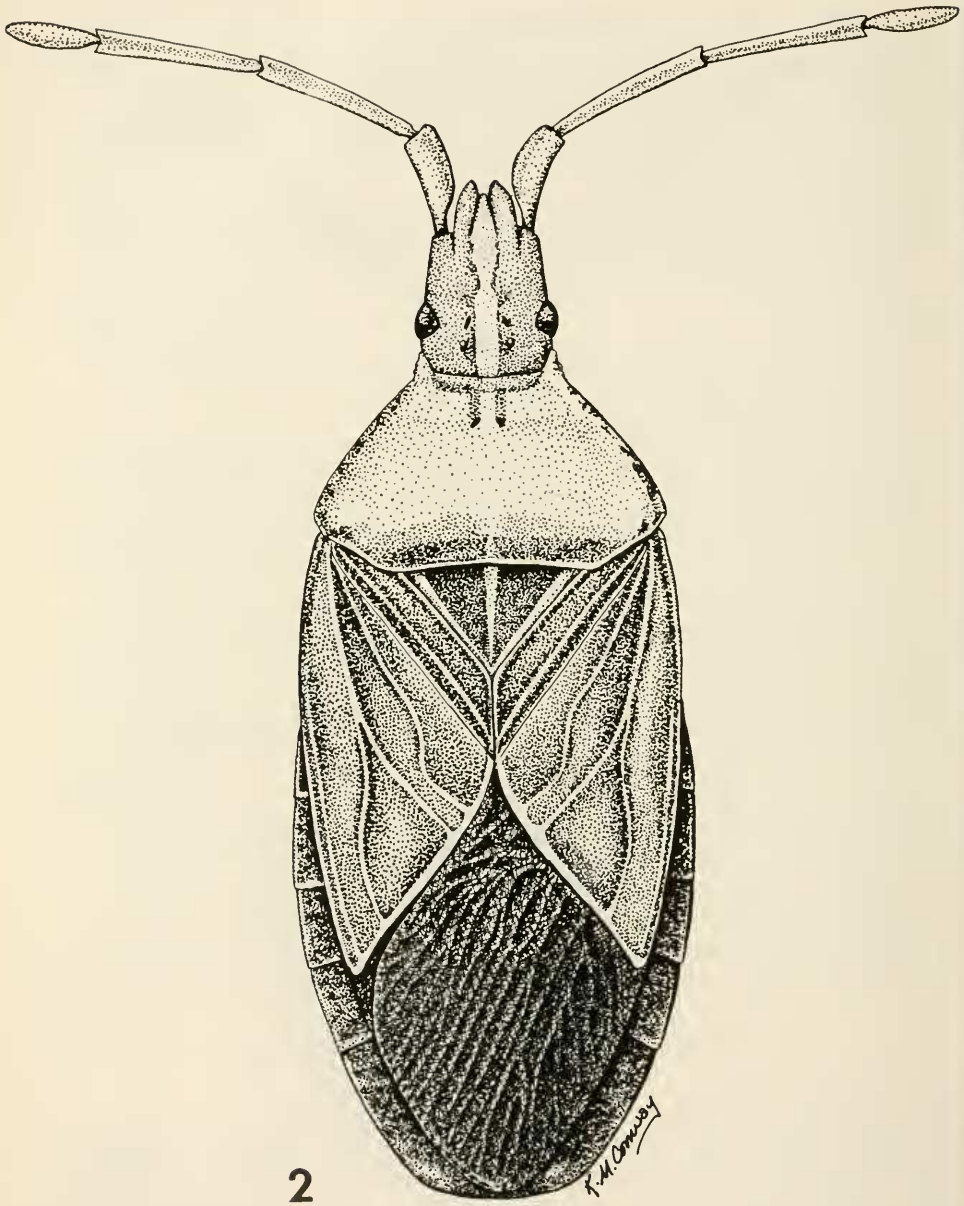


Fig. 2. *Chelinidea tabulata*, ♂, Bexar Co., Texas (USNM).

Upper surfaces of anterior femora carinate at their apices; under surface of anterior femora bearing distally a double row of 2–5 teeth; posterior femora greatly swollen, bearing a double row of 5–6 teeth on the apical $\frac{1}{3}$.

Color above yellowish brown to straw yellow, punctate with black. Head usually darker laterally with a pair of irregular fuscous stripes. Posterior and lateral margins of pronotum, scutellum, and coriaceous portion of hemelytra between the yellowish veins, punctate with black. A prominent cross formed on hemelytra by the predominantly pale clavi and posterior margin of corium bordering membrane. Membrane smoky black. Connexivum with segmental sutures indicated by pale lines. Beneath straw yellow, usually heavily punctate with black. Length 11 mm; humeral width 4 mm.

Female.—Very similar to male in structure and color. Slightly larger in size, length 11.8 mm; humeral width 4 mm.

Diagnosis.—This species with its carinate femora is related to *tabulata* and *canyonae* but differs in being smaller and by having the evident pale cross on the hemelytra.

Etymology.—Named for my nephew, Danny Staffiles, who has become seriously interested in the field of economic entomology.

Type-data.—Holotype ♂, Mexico: Mitla, Oaxaca, October 1974, F. D. Bennett, ex: *Opuntia pumila* (USNM Type no. 75319). Allotype ♀, same data. Paratypes, 2♂, same data; 1♀, Mexico, labeled *Xiphares tabulata*, P. R. Uhler collection (all in USNM); 1♂, 2♀ Mexico: 10 mi. n. Miltepec, Oaxaca, 26 July 1974, Clark, Murray, Ashe, Schaffner (Texas A&M).

Distribution.—Known only from the type-series from Oaxaca, Mexico.

Chelinidea tabulata (Burmeister)

Fig. 2

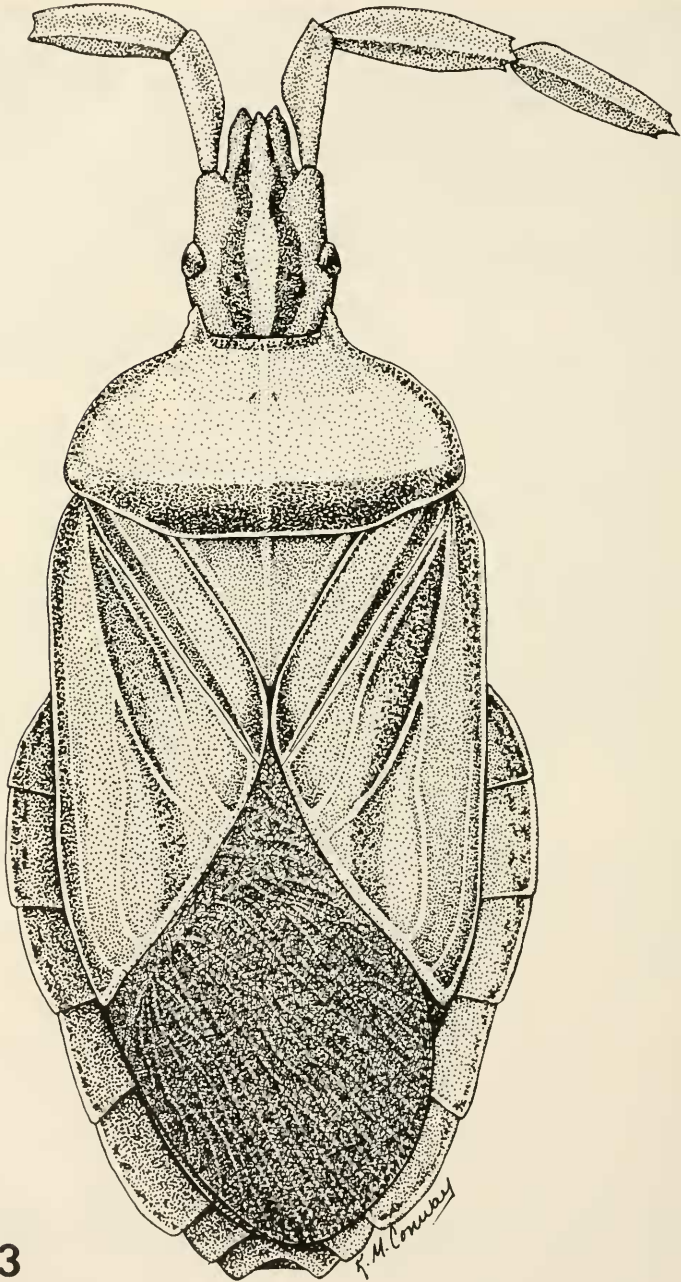
Gonocerus tabulata Burmeister, 1834: 311.

Xiphares tabulata: Stål, 1867: 551.

A medium to large sized species with acutely pointed juga which surpass apex of tylus.

Male.—Head in side view flattened above, anterior margin of buccula somewhat wider than that of lorum; rostrum just surpassing apex of posterior coxae; juga acutely pointed and distinctly surpassing apex of tylus at its dorsal level. Ocelli distinctly closer to eyes than to each other. Pronotum moderately convex transversely, lateral carina reflexed and produced anteriorly along the base of the head as two distinct acute teeth usually reaching more than halfway to eye. Connexivum dilated and reflexed. Upper surfaces of all femora carinate for almost their entire length; under surfaces of anterior femora bearing distally a double row of 6–11 teeth; posterior femora enlarged, bearing a double row of 8–10 teeth on apical $\frac{2}{3}$.

Color above straw yellow to buff, punctate with dark fuscous to black.



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Fig. 3. *Chelinidea canyona*, holotype ♀, Rio Frio, Texas (USNM).

Head often reddish brown laterally with irregular darker stripes defining the median pale tylus. Posterior and lateral margins of pronotum, scutellum and coriaceous portion of hemelytra between the straw colored veins, punctate with fuscous; the punctures on hemelytra forming an indistinct longitudinal striped pattern. Membrane smoky black. Connexivum dark with segments indicated by pale bars. Beneath yellowish brown, punctate with fuscous, sometimes with brown blotches. Length 12.5–15.0 mm; humeral breadth 4.2–5.0 mm.

Female.—Very similar to male in structure and color. Somewhat larger in size, length 15.5–16.0 mm; humeral breadth 5.0–5.8 mm. Averages fewer spines on anterior and posterior femora.

Distribution.—Widespread: Texas, Arizona, Colorado, California, Utah; Mexico; Guatemala; El Salvador; Honduras; Venezuela. Also introduced into Australia.

Chelinidea canyona Hamlin

Fig. 3

Chelinidea canyona Hamlin, 1923: 44.

A large species with juga and tylus of equal length or tylus slightly longer. Fore femora with only 2 or 3 teeth.

Male.—Head in side view somewhat flattened above, anterior margin of buccula wider than that of lorum; rostrum just surpassing apex of hind coxae; juga acutely pointed and just attaining tip of tylus or slightly exceeded by it. First 3 antennal segments usually broadly foliaceous. Ocelli closer to eyes than each other. Pronotum moderately convexed transversely, lateral carinae strongly reflexed and produced anteriorly along the base of head as two distinct acute teeth, reaching more than half way to eye. Connexivum strongly dilated and reflexed. Upper surfaces of all femora carinate; under surfaces of anterior femora bearing distally 2 or 3 small teeth; posterior femora enlarged, bearing a double row of 4–5 teeth on apical half.

Color above rust to reddish brown with fuscous to black markings and punctures. Head usually rust colored laterally with reddish brown to black longitudinal stripes bordering the medial yellow brown stripe. Posterior and lateral margins of pronotum and reflexed margins of hemelytra punctate with black. Medial line of scutellum, apex of clavus, and disc of hemelytra with black punctures, those on hemelytra forming a rather distinct dark stripe. Veins of corium pale, membrane smoky black. Connexivum punctate with fuscous, margins and incisures pale. Sterna heavily infuscated particularly the leg bases; underside of abdomen straw yellow. Length 12.5–14.0 mm; humeral breadth 4.8 mm.

Female.—Very similar to male in structure, often not as strongly colored. Length 14.5–15.5 mm; humeral breadth 4.5–5.0 mm.

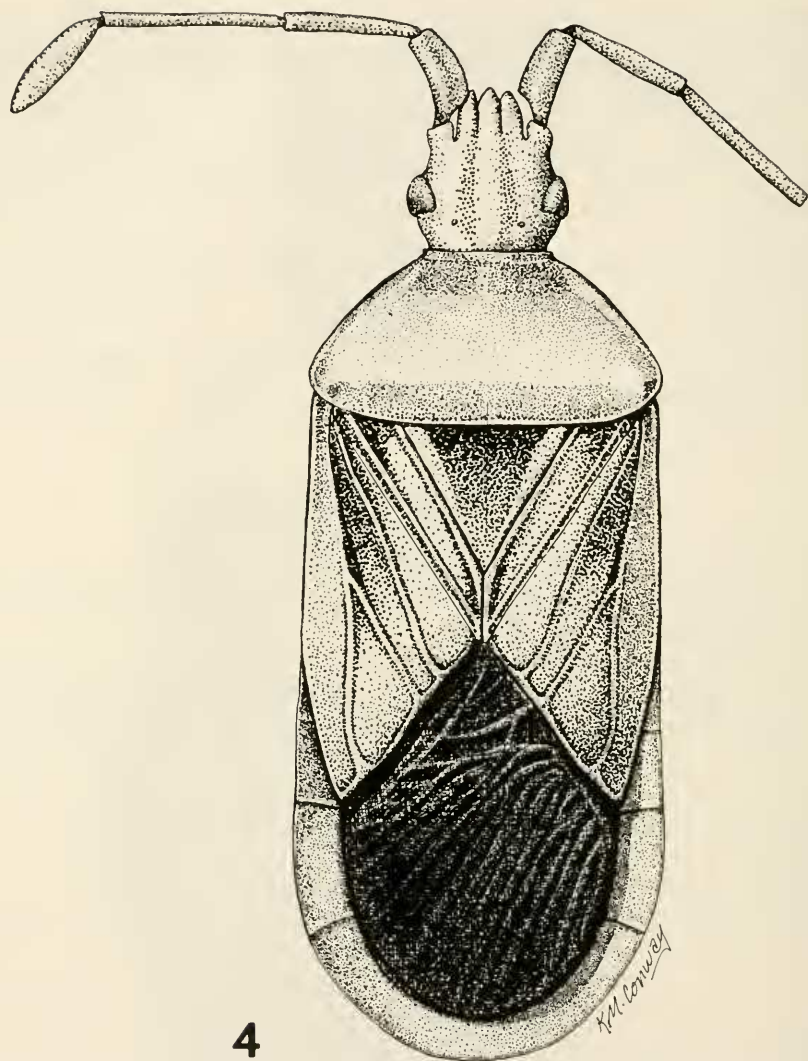


Fig. 4. *Chelinidea hunteri*, holotype ♂, Hermosillo, Sonora (USNM).

Distribution.—Arkansas, Texas; Mexico: Chihuahua, Durango, San Luis Potosi.

Chelinidea hunteri Hamlin

Fig. 4

Chelinidea hunteri Hamlin, 1923: 43.

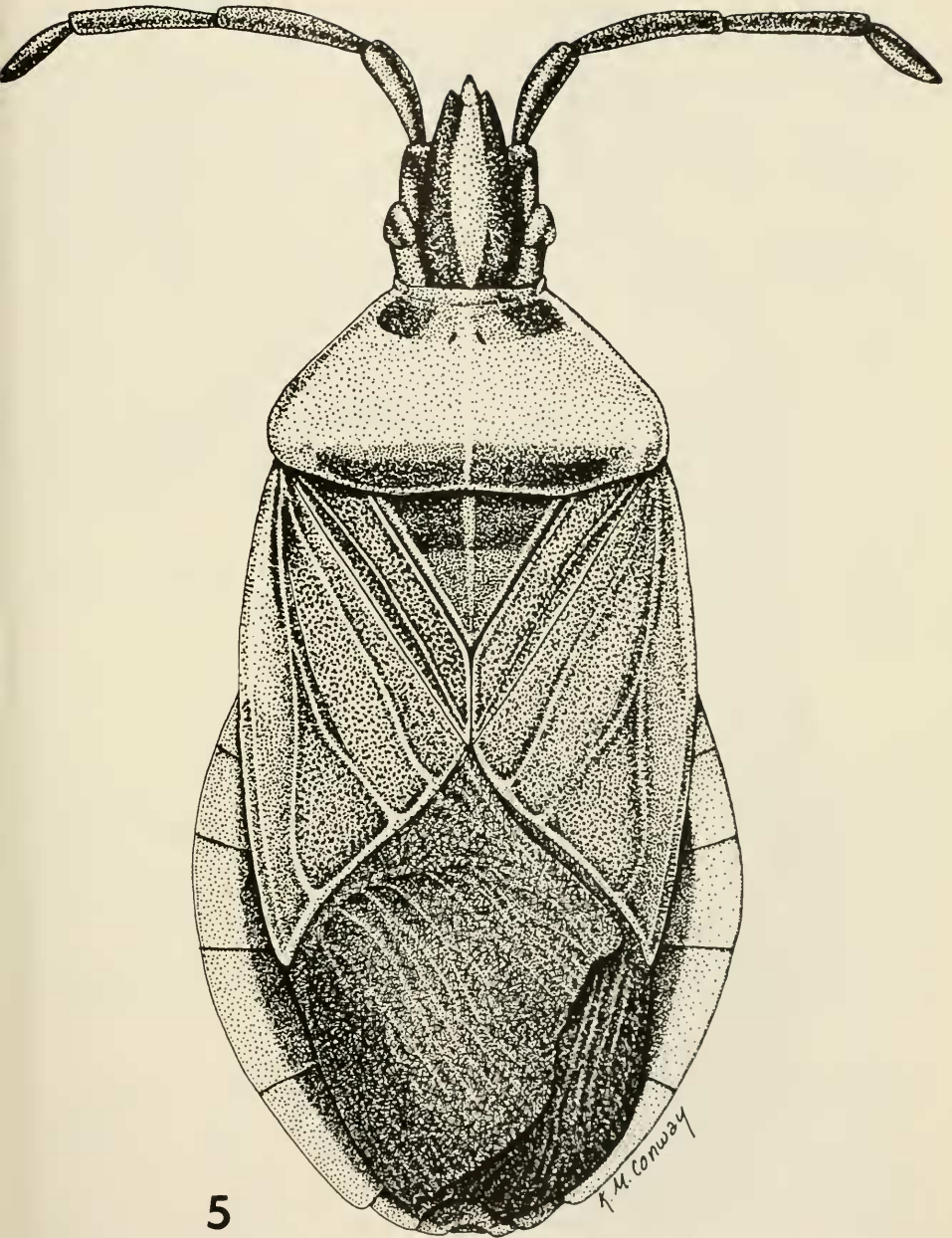


Fig. 5. *Chelinidea vittiger*, ♀, no locality, Uhler collection (USNM).

A predominantly pale straw-colored species with no indication of teeth on anterior margin of pronotum. Collar clearly delimited.

Male.—Head in side view rather swollen above, anterior margin of bucculae wider than that of lorum; beak just reaching apex of hind coxae; juga rounded anteriorly and just attaining tip of tylus or slightly exceeded by it. Ocelli much closer to eyes than to each other. Pronotum strongly convexed transversely, reflexed lateral margins distinctly lower than intervening area of thorax and not produced anteriorly into teeth; collar clearly delimited from remainder of pronotum, its anterior margin straight. Connexivum dilated and reflexed. Upper surfaces of all femora evenly rounded; under surfaces of anterior femora bearing distally 3–5 small teeth; posterior femora enlarged, bearing a double row of 7–10 teeth over the apical $\frac{2}{3}$ or more.

Color above an almost uniform straw yellow with fuscous punctures, mostly delimiting the veins; some fuscous markings on scutellum and bases of clavus and corium. Membrane smoky black. Connexivum faintly marked with fuscous, incisures paler. Venter entirely straw colored, only the tips of the femoral spines and apex of beak black. Length 9.5–11.5 mm; humeral breadth 4.0–4.3 mm.

Female.—Very similar to male in structure and color. Length 11.0–12.5 mm; humeral breadth 4.0–4.5 mm.

Distribution.—Texas, Arizona; Mexico: Sonora.

Chelinidea vittiger Uhler

Figs. 5–8

Chelinidea vittiger Uhler, 1863: 366.

Chelinidea vittiger vittiger var. *artuflava* McAtee, 1919: 11. NEW SYNONYMY.

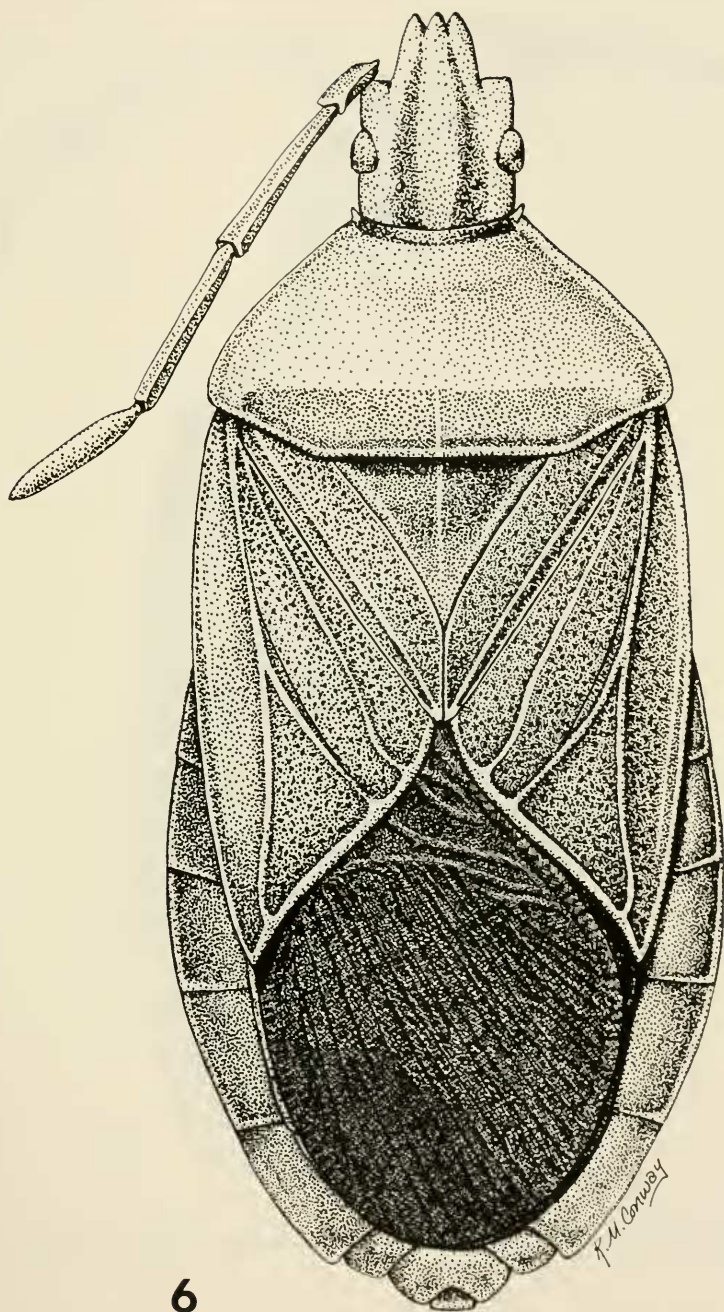
Chelinidea vittiger aequoris McAtee, 1919: 12. NEW SYNONYMY.

Chelinidea vittiger aequoris var. *artuatra* McAtee, 1919: 12. NEW SYNONYMY.

Chelinidea vittigera (!) var. *texana* Hamlin, 1923: 45. Synonymized by Hamlin 1924 under *C. vittiger aequoris*.

A variable widespread species in which the anterior spines of the pronotum are reduced to small blunt tubercles with a distinct notch at base.

Male.—Head in side view distinctly swollen above, anterior margin of buccula subequal to that of lorum; rostrum reaching apex of posterior coxae; juga barely exceeding apex of tylus. Ocelli widely separated, distance to eye less than half that between ocelli. Pronotum strongly convexed transversely, lateral carinae gently reflexed and produced anteriorly at base of head as two small blunt tubercles with a distinct notch at base. Connexivum moderately dilated and reflexed. Upper surfaces of all femora evenly rounded; under surfaces of anterior femora bearing distally only 2–3 small teeth;



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Fig. 6. *Chelinidea vittiger vittiger* var. *artuflava*, holotype ♀, Huachuca Mts., Arizona (USNM).

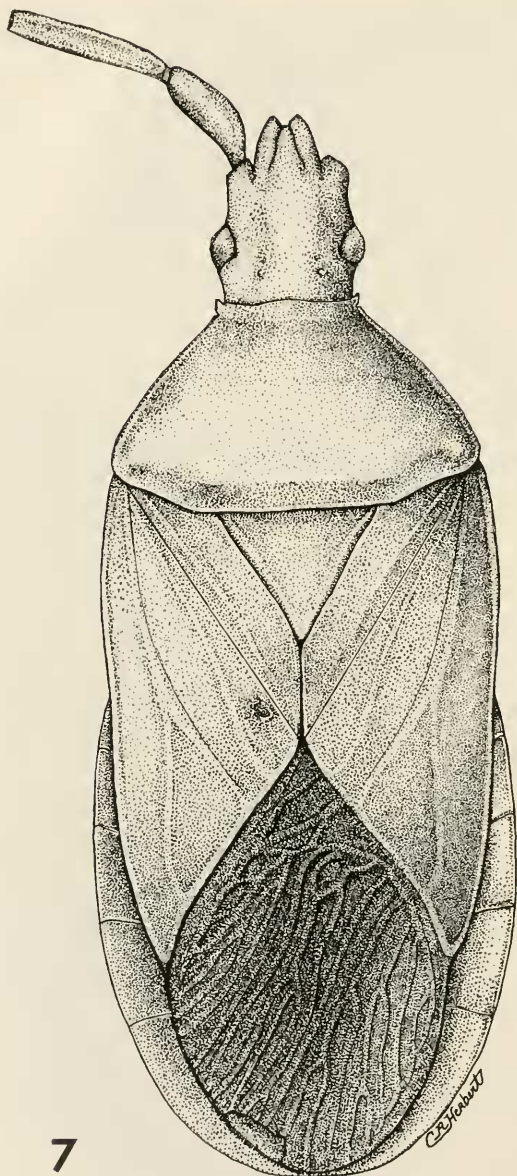


Fig. 7. *Chelinidea vittiger aequoris*, holotype ♂, San Diego, Texas (USNM).

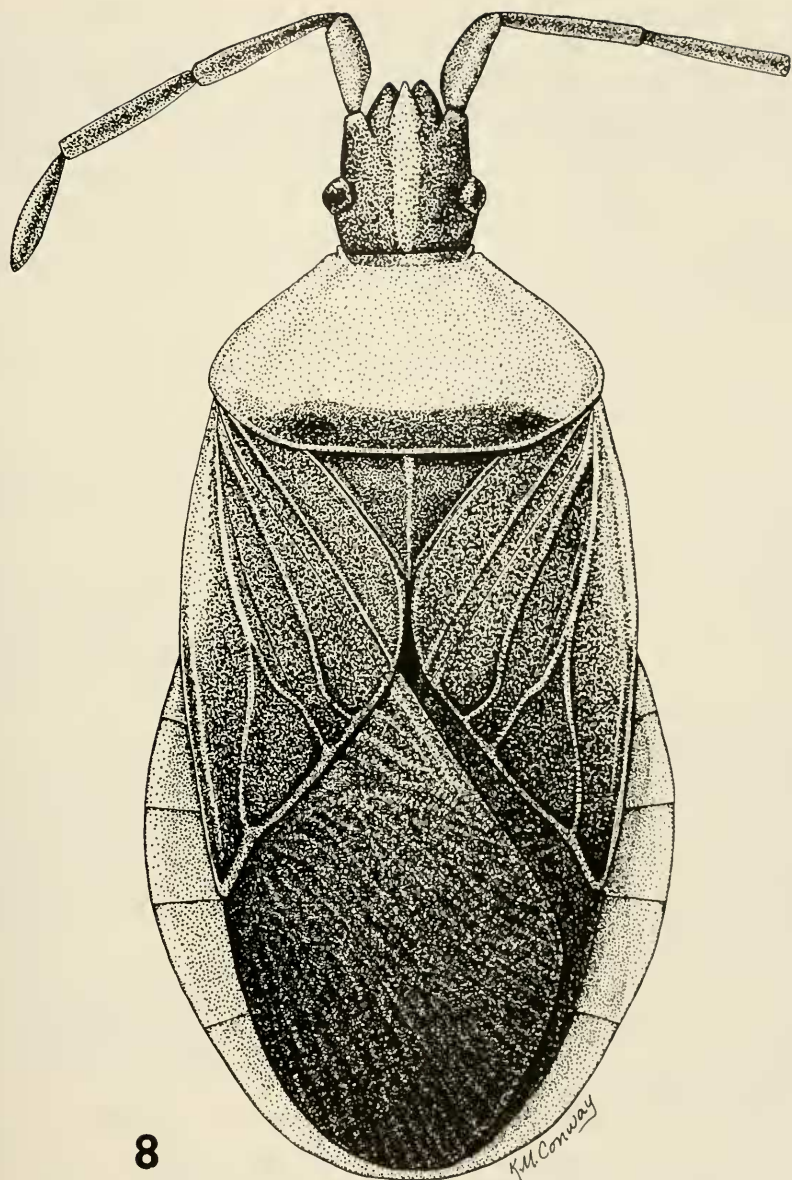


Fig. 8. *Chelinidea vittiger aequoris* var. *artuatra*, holotype ♂. Southern Pines, North Carolina (USNM).

posterior femora bearing a double row of 8–11 teeth and numerous small denticles.

Color typically sordid yellowish orange marked with fuscous to black stripes and punctures. Head primarily reddish brown, tylus pale. Anterior and posterior margins of pronotum and base of scutellum with dark brown marks or stripes. Coriaceous portion of hemelytra between veins punctate with fuscous. Membrane smoky black. Disk of abdomen dark, edge of connexivum pale. Beneath sordid yellow orange; antennae, apex of beak, underside of head and all legs reddish brown to black. Length 12.0–14.5 mm; humeral breadth 4.5–5.1 mm.

Female.—Very similar to male but somewhat larger in size. Posterior femora not as swollen and with relatively fewer spines. Length 14.0–15.0 mm; humeral breadth 4.8–5.2 mm.

Distribution.—The range of this species coincides with the distribution of prickly pear cactus in the United States, Canada, and Mexico. It occurs from Virginia south to northern Florida and west through Nebraska and Texas to Oregon and California, southwestern Canada, and in the more northern states of Mexico.

Variation.—This species varies from completely pale to the sordid yellow and black form described above. There is every combination of rounded to reflexed anterior pronotal margins. I can find no constant differences to justify the separation of this species into the subspecies and varieties that have been described.

Type-designation.—There is a Uhler specimen in the U.S. National Museum of Natural History type collection labeled as type (probably by C. V. Riley) which bears no other data. McAtee (1919) restricted the type-locality to Fort Benton, Wyoming without selecting a type. The only Uhler specimen from this locality is one (without a head) bearing the labels "Ft. Btn., P. R. Uhler Collection." I hereby designate this specimen as LECTOTYPE (USNM Type no. 76200) of *C. vittiger* Uhler.

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NOTICE OF A NEW PUBLICATION

The North American Predaceous Midges of the Genus Palpomyia Meigen (Diptera: Ceratopogonidae). By William L. Grogan, Jr., Department of Entomology, University of Maryland, College Park, Maryland, and Willis W. Wirth, Systematic Entomology Laboratory, IIBIII, Agric. Res., Sci. and Educ. Admin., USDA, Washington, D.C. Memoirs of the Entomological Society of Washington, Number 8, 125 pp. Cost, \$12.00.

Thirty-one species of the genus *Palpomyia* in North America are described and illustrated. Nine are new species. Keys are presented for adults, pupae of 19 species, and larvae of 5 species. Adult and larval biologies, zoogeography, economic importance, classification, and phylogenetic relationships are discussed. Phylogenies are presented for the tribes Stenoxenini and Palpomyiini, the latter including *Pachyhelea* Wirth and 4 species groups of *Palpomyia*. Numerous illustrations, distribution maps, and an index are included.

This publication can be ordered from the Custodian, Entomological Society of Washington, % Department of Entomology, Smithsonian Institution, Washington, D.C. 20560.